Applicants regard as their invention, in terms that distinguish over the art of record. Claims 1, 16, and 19 are in independent form. Favorable reconsideration is requested.

Claims 1-10 and 12-19 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,031,543 (*Miyashita et al.*).

Claim 11 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Miyashita et al.* as applied to Claim 9, and further in view of U.S. Patent No. 5,497,431 (*Nakamura*).

First, cancellation of Claims 2, 5, 6, 8-11, and 17 renders their rejections moot.

As shown above, Applicants have amended independent Claims 1, 16, and 19 in terms that more clearly define the present invention. Applicants submit that these amended independent claims, together with the remaining claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

The aspect of the present invention set forth in Claim 1 is an image processing apparatus. The image processing apparatus includes a saturation calculation unit arranged to calculate saturation information of an image, a saturation conversion characteristic generating unit arranged to generate a saturation conversion characteristic on the basis of each conversion condition for low-saturation side and high-saturation side, where the saturation conversion characteristic shows the relationship between input saturation information and output saturation information, and a saturation conversion unit arranged to convert the saturation of the image on the basis of the saturation conversion characteristic.

One important feature of Claim 1 is generating the saturation conversion characteristic, used to convert the saturation, on the basis of each conversion condition for low-saturation side and high-saturation side, where the saturation conversion characteristic shows the

relationship between input saturation information and output saturation information. By virtue of this arrangement, chromatic color can be prevented from becoming achromatic at the low-saturation side or being saturated at the high-saturation side as a result of saturation conversion. That is, the optimum saturation conversion characteristic corresponding to each conversion condition for low-saturation side and high-saturation side can be generated as shown in Figures 12 and 14.

Miyashita et al., as understood by Applicants, relates to an image processor for retouching color images. Apparently, *Miyashita et al.* teaches separately adjusting each of brightness, saturation (chroma) and hue. For example, as shown in Figure 9, the hue adjustment condition is set by moving the circle on the a*-b* plane. As shown in Figure 10, the saturation adjustment condition is set by scaling the size of the circle on the a*-b* plane. That is, *Miyashita et al.* clearly sets only kind of parameter for converting saturation.

An object of the present invention is to overcome the problem incurred where only one kind of parameter is set for saturation conversion, as is the case in *Miyashita et al.* *Miyashita et al.* converts the high-saturation side and the low-saturation side at the same conversion ratio, regardless of the value of the inputted saturation. Therefore, according to *Miyashita et al.*, the high-saturation side may become saturated and the low-saturation side may be converted into achromatic color as a result of the saturation conversion. In contrast, according to the present invention, as recited in Claim 1, a saturation conversion characteristic generating unit is arranged to generate a saturation conversion characteristic on the basis of each conversion condition for low-saturation side and high-saturation side. That is, independent conversion conditions for low-saturation side and high-saturation side are set to solve the problem discussed above, and described in "Background Of The Invention" section of the present invention.

Because different saturation parameters can be set at the low and high saturation sides, over saturation or under saturation due to saturation conversion can be avoided, and that the appropriate saturation correction can be achieved at both sides.

Nothing has been found in *Miyashita et al.* that teaches or suggests generating the saturation conversion characteristic, used to convert the saturation, on the basis of each conversion condition for low-saturation side and high-saturation side, where the saturation conversion characteristic shows the relationship between input saturation information and output saturation information.

Accordingly, Applicants submit that Claim 1 is not anticipated by *Miyashita et al.*, and respectfully request withdrawal of the rejection under 35 U.S.C. § 102(e).

Independent Claims 16 and 19 are method and recording medium claims respectively corresponding to apparatus Claim 1, and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 1.

The other rejected claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

Joseph W. Ragusa

Attorney for Applicants

Registration No. 38,586

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200
NY MAIN 307195

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) An image processing apparatus comprising:

[saturation calculation means for calculating] a saturation calculation unit arranged to calculate saturation information of an image;

[parameter setting means for setting a plurality of parameters used to convert saturation of the image] a saturation conversion characteristic generating unit arranged to generate a saturation conversion characteristic on the basis of each conversion condition for low-saturation side and high-saturation side, where said saturation conversion characteristic shows the relationship between input saturation information and output saturation information; and

[saturation conversion means for converting] a saturation conversion unit arranged to convert the saturation of the image on the basis of [the plurality of parameters] said saturation conversion characteristic.

Claim 2 has been canceled.

3. (Amended) The apparatus according to claim 1, [wherein said parameter setting means sets the parameters on the basis of the saturation information of the image] further comprising a conversion condition setting unit arranged to set said each conversion condition for low-saturation side and high-saturation side by using said saturation information.

4. (Amended) The apparatus according to claim 1, further comprising[:] an instruction [means for making] unit arranged to make an instruction input by a user[, and wherein

said parameter setting means sets the parameters on the basis of the instruction by said instruction means] in order to set said each conversion condition for low-saturation side and high-saturation side.

Claims 5 and 6 have been canceled.

7. (Amended) The apparatus according to claim [6] 1, wherein [the] said saturation conversion [characteristics exhibit] characteristic exhibits a monotonous increase or a monotonous decrease.

Claims 8-11 have been canceled.

12. (Amended) The apparatus according to claim 1, further comprising:

a detection [means for detecting] unit arranged to detect a color distribution of the image;

a generation [means for generating] unit arranged to generate gradation correction information of the image on the basis of the color distribution; and

a gradation correction [means for performing] unit arranged to perform gradation correction of the image on the basis of the gradation correction information.

13. (Amended) The apparatus according to claim 12, wherein said saturation conversion [means] unit performs saturation conversion for an image which has undergone the gradation correction by said gradation correction [means] unit.

14. (Amended) The apparatus according to claim 12, wherein said generation [means] unit comprises:

a highlight calculation [means for calculating] unit arranged to calculate highlight area information of an image on the basis of the color distribution; and

a white balance calculation [means for calculating] unit arranged to calculate white balance information on the basis of the highlight area information and a predetermined highlight value, and wherein

said gradation correction [means] unit corrects gradation of the image on the basis of the white balance information and the highlight value.

15. (Amended) The apparatus according to claim 12, wherein said generation [means] unit comprises

a shadow calculation [means for calculating] unit arranged to calculate shadow area information of an image; and

a black balance calculation [means for calculating] unit arranged to calculate black balance information on the basis of the shadow area information and a predetermined shadow value, and wherein

said gradation correction [means] unit corrects gradation of the image

on the basis of the black balance information and the shadow value.

16. (Amended) An image processing method comprising:

[the] a saturation calculation step, of calculating saturation information of an image;

[the parameter setting step of setting a plurality of parameters used to convert saturation of the image] a saturation conversion characteristic generating step, of generating a saturation conversion characteristic on the basis of each conversion condition for low-saturation side and high-saturation side, where said saturation conversion characteristic shows the relationship between input saturation information and output saturation information; and

[the] a saturation conversion step, of converting the saturation of the image on the basis of [the plurality of parameters] said saturation conversion characteristic.

Claim 17 has been canceled.

18. (Amended) The method according to claim 16, [wherein the parameter setting step includes the step of setting the parameters on the basis of the saturation information of the image] further comprising a conversion condition setting step, of setting said each conversion condition for low-saturation side and high-saturation side by using said saturation information.

19. (Amended) A recording medium comprising program codes of an image processing method at least comprising:

[a] code [of the] for a saturation calculation step, of calculating saturation information of an image;

[a] code [of the parameter setting step of setting a plurality of parameters used to convert saturation of the image] a saturation conversion characteristic generating step, of generating a saturation conversion characteristic on the basis of each conversion condition for low-saturation side and high-saturation side, where said saturation conversion characteristic shows the relationship between input saturation information and output saturation information; and

[a] code [of the] for a saturation conversion step, of converting the saturation of the image on the basis of [the plurality of parameters] said saturation conversion characteristic.

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